

Amendments to the Claims:

Please amend the claims as shown in the following listing of claims, which will replace all prior versions and listings of claims in the application.

1.-38. (Canceled)

39. (New) A thermoset plastic material comprising a three-dimensional matrix containing sulphur atoms and at least one antiplasticizing additive that does not react with said matrix.

40. (New) The material of claim 39, wherein the three-dimensional matrix is a polythiourethane matrix or a polyepisulfide matrix.

41. (New) The material of claim 40, wherein the polythiourethane matrix is produced by means of a polyaddition reaction of a NCO end group-containing polythiourethane prepolymer with a SH end group-containing polythiourethane prepolymer.

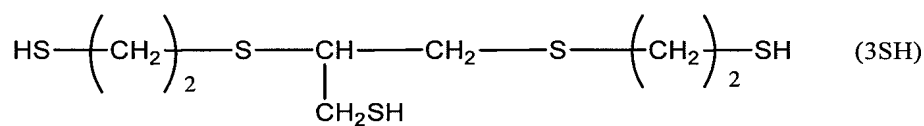
42. (New) The material of claim 41, wherein the NCO end group-containing polythiourethane prepolymer has a number average molecular weight ranging from 1000 to 2000.

43. (New) The material of claim 41, wherein the NCO end group-containing polythiourethane prepolymer has a NCO/SH ratio from 4:1 to 30:1.

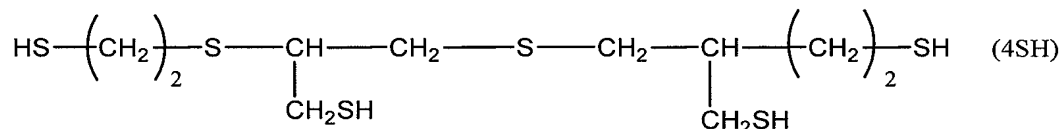
44. (New) The material of claim 41, wherein the SH end group-containing polythiourethane prepolymer has a number average molecular weight ranging from 200 to 300.

45. (New) The material of claim 41, wherein the SH end group-containing polythiourethane prepolymer has a SH/NCO ratio ranging from 4:1 to 30:1.

46. (New) The material of claim 41, wherein the NCO end group-containing polythiourethane prepolymer and/or the SH end group-containing polythiourethane prepolymer results from the polyaddition of xylene diisocyanate and/or dimethyl norbornyl diisocyanate with polythiol of formula:



and/or



47. (New) The material of claim 39, wherein antiplasticizing additive has an antiplasticization temperature in the range of temperatures from 0 to 85°C.

48. (New) The material of claim 39, wherein the antiplasticizing additive has a solubility parameter δ_a , wherein:

$$\delta_{mo} - \delta_a < 5 \text{ MPa}^{1/2}$$

and δ_{mo} is a solubility parameter of polyisocyanate and polythiol monomers used to produce the polythiourethane matrix.

49. (New) The material of claim 39, wherein the antiplasticizing additive has a solubility parameter δ_a , wherein:

$$\delta_{ma} - \delta_a > 4 \text{ MPa}^{1/2}$$

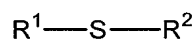
and δ_{ma} corresponds is a solubility parameter of the matrix.

50. (New) The material of claim 39, wherein the antiplasticizing additive has a solubility parameter δ_a , wherein:

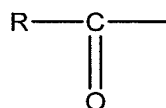
$$19 \leq \delta_a \leq 23.$$

51. (New) The material of claim 39, wherein the antiplasticizing additive is a dialkyl sulfide, diaryl sulfide, dialkylaryl sulfide, alkylaryl sulfide, aryl sulfide, alkylaryl sulfide, aryl silane sulfide, alkyl silane sulfide, carbonyl derivative, S-arylthioalkylate, bis-arylthioalkyl, thiourea derivative, urethane derivative, or diurethane derivative.

52. (New) The material of claim 51, wherein the antiplasticizing agent comprises a sulfide of formula:

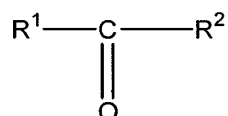


wherein R¹ and R² are independently an alkyl radical, a cycloalkyl radical, an aryl radical; an arylalkyl radical, a radical:

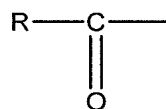


wherein R is an alkyl radical, or a trialkyl silane radical.

53. (New) The material of claim 51, wherein the antiplasticizing agent is a carbonyl derivative of formula:

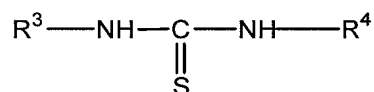


wherein R¹ and R² are independently an alkyl radical, a cycloalkyl radical, an aryl radical, an arylalkyl radical, a radical:



wherein R is an alkyl radical, or a trialkyl silane radical.

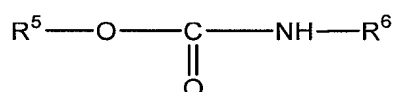
54. (New) The material of claim 51, wherein the antiplasticizing agent is a thiourea derivative of formula:



wherein R³ and R⁴ are independently an alkyl radical, a cycloalkyl radical, an alkyl radical bearing a nitrogen and/or an oxygen heterocycle.

55. (New) The material of claim 54, wherein at least one of R³ and R⁴ is a C₁-C₁₂ alkyl radical, a 6-membered radical, or a 4-morpholinoalkyl radical.

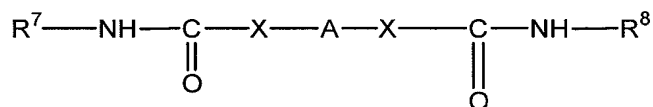
56. (New) The material of claim 51, wherein the antiplasticizing agent is a urethane derivative of formula:



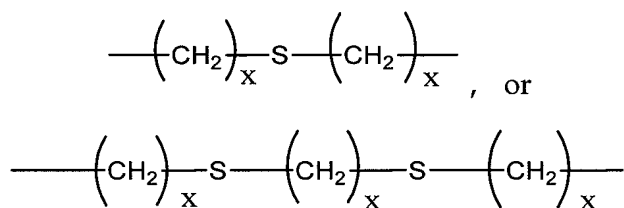
wherein R⁵ and R⁶ are independently a cycloalkyl group, a cycloalkyl alkyl group, an aryl group, or an arylalkyl group.

57. (New) The material of claim 56, wherein at least one of R⁵ and R⁶ is a 6-membered radical, a cyclohexylalkyl group, a phenyl group, or a phenylpropyl group.

58. (New) The material of claim 51, wherein the antiplasticizing agent is a thiourethane derivative of formula:

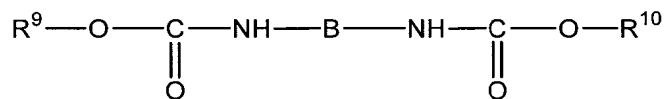


wherein A is a C₁-C₁₂ alkylene group,

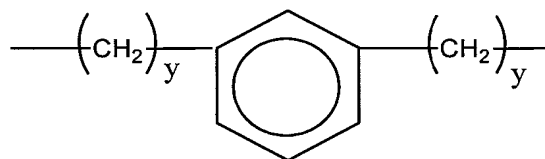


wherein x is an integer ranging from 1 to 6 and wherein X is -O- or -S- and R⁷ and R⁸ are independently a cycloalkyl group or aryl group.

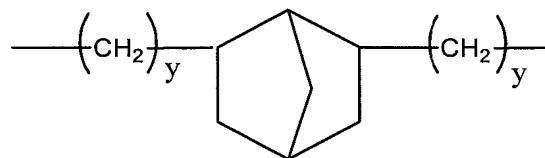
59. (New) The material of claim 51, wherein the antiplasticizing agent is a diurethane derivative of formula:



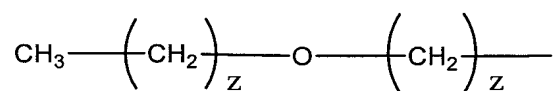
wherein B is a radical of formula:



or



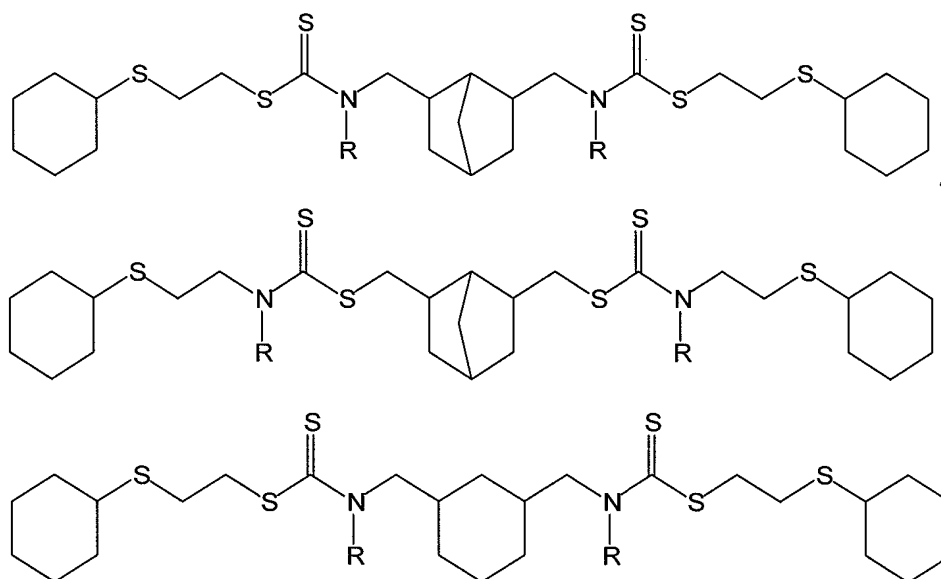
wherein y is an integer ranging from 1 to 4 and R⁹ and R¹⁰ are independently a cycloalkyl alkyl radical, an aryl (C₁-C₆)alkyl radical, a (bridged) cycloalkyl (C₁-C₆)alkyl radical, or an ether-oxide radical of formula:



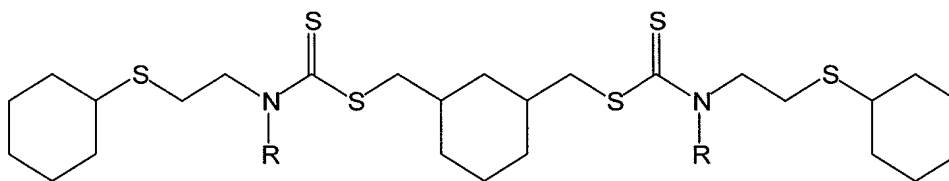
wherein z is an integer ranging from 1 to 4.

60. (New) The material of claim 51, wherein the antiplasticizing additive is dioctyl sulfide, benzyl and phenyl sulfide, dibenzyl sulfide, 4-(p-tolylthio)benzophenone, bis(phenylthio)methane, S-phenylthiopropionate, phenylthiomethyltrimethyl silane, 1-cyclohexyl-3-(2-morpholinoethyl)-2-thiourea, cyclohexylpropylcyclohexyl urethane, phenylpropylcyclohexyl-(octane diurethane), cyclohexylpropyl-cyclohexylpropylxylylene diurethane, cyclohexylethyl-cyclohexylethylxylylene diurethane, phenylpropyl-phenylmethane, propoxyethyl-propoxyethylxylylene diurethane, norbornanemethyl-norbornanemethylxylylene diurethane, phenylpropyl-phenylpropylxylylene diurethane, cyclohexyl-cyclohexyl (thiodiethane di-S-thiourethane), phenyl-phenyl (thiodiethane di-S-thiourethane), cyclohexyl-cyclohexyl (dithiaoctane diurethane), cyclohexylpropyl-cyclohexylpropyl dimethyl norbornane diurethane, cyclohexylethyl-cyclohexylethyldimethyl norbornane diurethane, propoxyethyl-propoxyethyldimethyl norbornane diurethane, norbornanemethyl-norbornanemethyldimethyl norbornane diurethane, phenylpropyl-phenylpropyl-dimethyl norbornane diurethane, cyclohexyl-cyclohexyl (thiodiethane diurethane), or phenyl-phenyl (thiodiethane diurethane).

61. (New) The material of claim 51, wherein the antiplasticizing has one of the formulae:



or

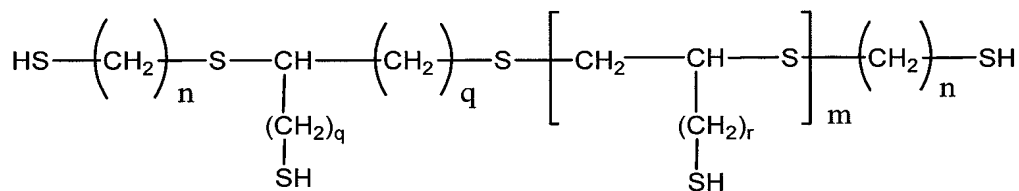


wherein R is H, an alkyl group, or an aryl group.

62. (New) The material of claim 39, wherein the antiplasticizing additive is present in amount ranging from 5 to 25% by weight of the total weight of the polythiourethane matrix.
63. (New) The material of claim 62, wherein the antiplasticizing additive is present in amount ranging from 5 to 15% by weight of the total weight of the polythiourethane matrix
64. (New) The material of claim 39, wherein the polythiourethane matrix is producible by polyaddition of at least one polyisocyanate and at least one polythiol.
65. (New) The material of claim 64, wherein the polyisocyanate is a diisocyanate.
66. (New) The material of claim 64, wherein the polythiol is a tri- or tetrathiol.
67. (New) The material of claim 64, wherein the polyisocyanate an aromatic polyisocyanate, aliphatic polyisocyanate, or cycloaliphatic polyisocyanate.
68. (New) The material of claim 67, wherein the polyisocyanate is phenylene diisocyanate, ethylphenylene diisocyanate, isopropylphenylene diisocyanate, dimethylphenylene diisocyanate, diethylphenylene diisocyanate, diisopropylphenylene diisocyanate, trimethylbenzyl triisocyanate, xylylene diisocyanate (XDI), benzyl triisocyanate, 4,4'-diphenylmethanediisocyanate and isophorone diisocyanate, hexamethylene diisocyanate, bis(isocyanate)methyl cyclohexane, dicyclohexyl methane diisocyanate, dimethyl norbornyl diisocyanate (NDI), or norbornyl methyl diisocyanate.
69. (New) The material of claim 64, wherein the polythiol is:

$$R'(SH)_{n'}$$
 wherein R' is an organic group the valence of which corresponds to n'; where n' is an integer ranging from 2 to 6.

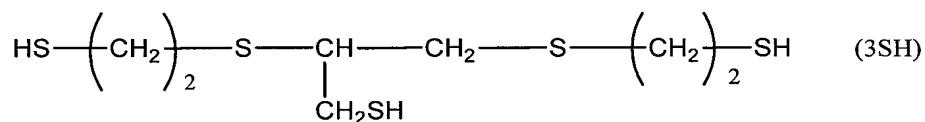
70. (New) The material of claim 69, wherein the polythiol has following formula:



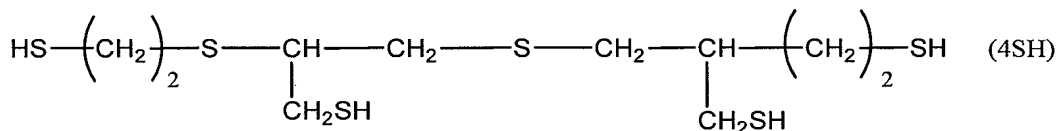
wherein n is an integer ranging from 1 to 4, p, q and r are integers ranging from 1 to 4, and m is the integer 1 or 2.

71. (New) The material of claim 70, wherein the polythiol is pentaerythritol tetrakis mercaptopropionate, 1-(1'-mercaptoethylthio)-2,3-dimercapto propane, 1-(2'-mercaptoethylthio)-2,3-dimercapto propane, 1-(3'-mercaptoethylthio)-2,3-dimercapto propane, 1-(4'-mercaptoethylthio)-2,3-dimercapto propane, 1-(5'-mercaptoethylthio)-2,3-dimercapto propane, 1-(6'-mercaptoethylthio)-2,3-dimercapto propane, 1,2-bis(4'-mercaptoethylthio)-3,mercaptopropane, 1,2-bis(6'-mercaptoethylthio)-3-mercaptopropane, 1,2,3-tris(mercaptomethylthio)propane, 1,2,3-tris(3'-mercaptoethylthio)propane, 1,2,3-tris(2'-mercaptoethylthio)propane, 1,2,3-tris(4'-mercaptoethylthio)propane, 1,2,3-tris(6'-mercaptoethylthio)propane, 1,6-hexanethiol-1,2,3-propanetriol, or 1,2-bis(2'-mercaptoethylthio)-3-mercaptopropane.

72. (New) The material of claim 71, wherein the polythiol has following formula:



or



73. (New) The material of claim 39, further defined as having a phase separation.

74. (New) The material of claim 73, further defined as having a nanophase separation.

75. (New) The material of claim 39, further defined as having an energy release ratio G_{IC} of at least 0.15 kJ.m^{-2} .

76. (New) An ophthalmic lens comprising an optically transparent, thermoset plastic material, comprising a three-dimensional polymer matrix, the loss modulus (E'') of which presents a secondary glass transition (β), and at least one antiplasticizing additive.

77. (New) The ophthalmic lens of claim 76, wherein the thermoset material has a nanophase separation.

78. (New) The ophthalmic lens of claim 76, wherein the matrix is a polyurethane matrix or a matrix producible by polymerizing a composition comprising at least one polyepisulfide.

79. (New) The ophthalmic lens of claim 76, wherein the antiplasticizing additive has a solubility parameter δ_a and:

$$\delta_{mo} - \delta_a < 5 \text{ MPa}^{1/2}$$

wherein δ_{mo} corresponds to the solubility parameter of polyisocyanate and polythiol monomers used to produce the polythiourethane matrix.

80. (New) The ophthalmic lens of claim 76, wherein the antiplasticizing additive has a solubility parameter δ_a and:

$$\delta_{ma} - \delta_a > 4 \text{ MPa}^{1/2}$$

wherein δ_{ma} corresponds to the solubility parameter of the matrix.

81. (New) The ophthalmic lens of claim 76, wherein the thermoset material comprises a three-dimensional matrix containing sulphur atoms and at least one antiplasticizing additive that does not react with said matrix.

82. (New) A method of making an ophthalmic lens comprising obtaining a thermoset plastic material of claim 39, and using the material to form a lens.